

Amendment under 37 CFR 1.111  
Serial No. 10/797,596  
Attorney Docket No. 042184

**AMENDMENTS TO THE DRAWINGS**

The attached Replacement Drawings Sheets includes changes to Figs 1 and 2. Figs. 1 and 2 have each been amended to include "Prior Art" in the legend.

Amendment under 37 CFR 1.111  
Serial No. 10/797,596  
Attorney Docket No. 042184

### **REMARKS**

Claims 1 - 16 are pending in the present application. By this Amendment, claims 9 and 14 have each been amended and new claims 17-28 have been added. No new matter has been added. It is respectfully submitted that this Amendment is fully responsive to the Office Action dated June 15, 2005.

### **Allowable Subject Matter:**

Applicants gratefully acknowledges the indication in item 7 of the Office Action that claims 3, 4, 11 and 12 would be allowable, if amended, to include all of the limitations of the base claim and any intervening claims.

However, for at least the reasons discussed below, it is respectfully submitted that all of claims 1-28 are allowable.

### **Drawings:**

In item 1 of the Action, the Examiner asserts that Figs. 1-3 should be designated as -- Prior Art--.

It is submitted that Figs. 1 and 2 have each been amended to include "Prior Art" in the legend. However, it is also submitted that Figs. 3A and 3B do not constitute prior

Amendment under 37 CFR 1.111  
Serial No. 10/797,596  
Attorney Docket No. 042184

art and instead clearly illustrate a first embodiment of the present invention. Accordingly, withdrawal of this objection is respectfully traversed.

**Claim Objections:**

Claims 9 and 14 stand objected to in item 2 of the Action due to minor informalities. It is respectfully submitted that claims 9 and 14 have each been amended to overcome such informalities. Accordingly, withdrawal of this claim objection is respectfully traversed.

**As to the Merits:**

As to the merits of this case, the Examiner sets forth the following rejections:

1) claims 1, 2, 5 and 8 stand rejected under 35 USC 102(b) as being anticipated by Hatakeyama et al. (U.S. Patent No. 5,883,470); and

2) claims 9, 10 and 13-16 stand rejected under 35 USC 103(a) as being unpatentable over Hatakeyama et al. in view of Fig. 1 of Applicants' Admitted Prior Art (AAPA).

Each of these rejections is respectfully traversed.

Independent claim 1 calls for a first electrode disposed in said plasma generating chamber; an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber; a second electrode disposed in said plasma generating chamber so as to face said first electrode. Independent claim 9 is drawn to a similar embodiment.

For example, as shown in Fig. 3A of the present application, the antennas 2 and the second electrode 5 are electrically insulated from each other so as to face the first electrode 1. Since both of the antennas 2 and the second electrode 5 are disposed so as to face the first electrode 1, it is possible to generate uniform plasma having a large diameter and to extract a neutral particle beam from the plasma at the same time.

The Examiner asserts that the Hatakeyama reference discloses:

a first electrode (i.e., downstream electrode 30, 36) disposed in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34); an antenna (i.e., excitation coil 25) disposed so as to face the first electrode (i.e., downstream electrode 30) for generating plasma in the plasma generating chamber (i.e., discharge tube 21) (Figs. 2, 3; Col. 4, lines 12-31; Col. 5, lines 2-34); a second electrode (i.e., upstream electrode 29, 35) disposed in the plasma generating chamber (i.e., discharge tube 21) so as to face the first electrode (i.e., downstream electrode 30, 36) (Fig. 3; Col. 4, lines 12-31; Col. 5, lines 2-34).<sup>1</sup>

---

<sup>1</sup> Please see, lines 2-9, page 3 of the Action.

However, the Examiner appears to be mis-characterizing the teaching of Hatakeyama since such reference does not disclose that the excitation coil 25 is disposed so as to face the downstream electrode 30, 36 for generating plasma in the discharge tube 21.

Instead, as shown in Fig. 2 of Hatakeyama, the excitation coil 25 is disposed around the discharge tube 21, which is similar to the convention beam source shown in prior art Fig. 1 of the present application, wherein the coil 220 is disposed around the beam generating chamber 240.

As such, it is respectfully submitted that Hatakeyama fails to disclose or fairly suggest the features of claim 1 concerning an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber.

Independent claim 6 calls for a first electrode disposed in said plasma generating chamber; an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber; a second electrode disposed between said antenna and said first electrode in said plasma generating chamber, said second electrode having a ring shape so as to surround said plasma generating chamber. Independent claim 14 is drawn to a similar embodiment.

For example, as shown in Figs. 7B-7C of the present application, the second electrode 65

has a ring shape surrounding the plasma generating chamber 64 at a peripheral portion of the plasma generating chamber 64. The second electrode 65 is arranged so as not to shield an electric field and a magnetic field from the antennas 62. Thus, the beam source according to the present embodiment is likely to uniformly generate high-density plasma.

However, as discussed above, Hatakeyama does not disclose that the excitation coil 25 is disposed so as to face the downstream electrode 30, 36 for generating plasma in the discharge tube 21. As such, it is respectfully submitted that Hatakeyama fails to disclose or fairly suggest the features of claim 6 concerning an antenna disposed so as to face said first electrode for generating plasma in said plasma generating chamber.

In addition, Hatakeyama fails to disclose that the upstream electrode 35 has a ring shape so as to surround the discharge tube 21. Instead, according to Hatakeyama the electrode 35 is a plate electrode. See col. 5, lines 5-10 of Hatakeyama.

As such, it is respectfully submitted that Hatakeyama fails to disclose or fairly suggest the features of claim 6 concerning said second electrode having a ring shape so as to surround said plasma generating chamber.

Amendment under 37 CFR 1.111  
Serial No. 10/797,596  
Attorney Docket No. 042184

**New Claims 17-28**

It is also submitted that Hatakeyama fails to disclose or fairly suggest the features of new claims 17-28. In addition, it is noted that claims 17, 18, 23, and 24 are supported by the specification at lines 1-3 of paragraph [0052]; claims 19 and 25 are supported by the specification at lines 4-6 of paragraph [0055]; claims 20 and 26 are supported by the specification at lines 1-3 of paragraph [0066]; claims 21 and 27 are supported by the specification at lines 1-2 of paragraph [0112]; claims 22 and 28 are supported by the specification at lines 1-2 of paragraph [0079] and lines 2-4 of paragraph [0131].

In view of the aforementioned amendments and accompanying remarks, Applicants submit that the claims, as herein amended, are in condition for allowance. Applicants request such action at an early date.

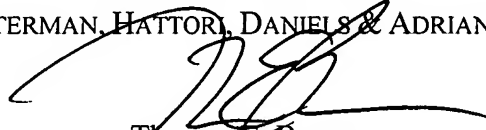
If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

Amendment under 37 CFR 1.111  
Serial No. 10/797,596  
Attorney Docket No. 042184

If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP

A handwritten signature in black ink, appearing to read 'TEB', is written over the printed name of Thomas E. Brown.

Thomas E. Brown  
Attorney for Applicants  
Registration No. 44,450  
Telephone: (202) 822-1100  
Facsimile: (202) 822-1111

TEB/jl